

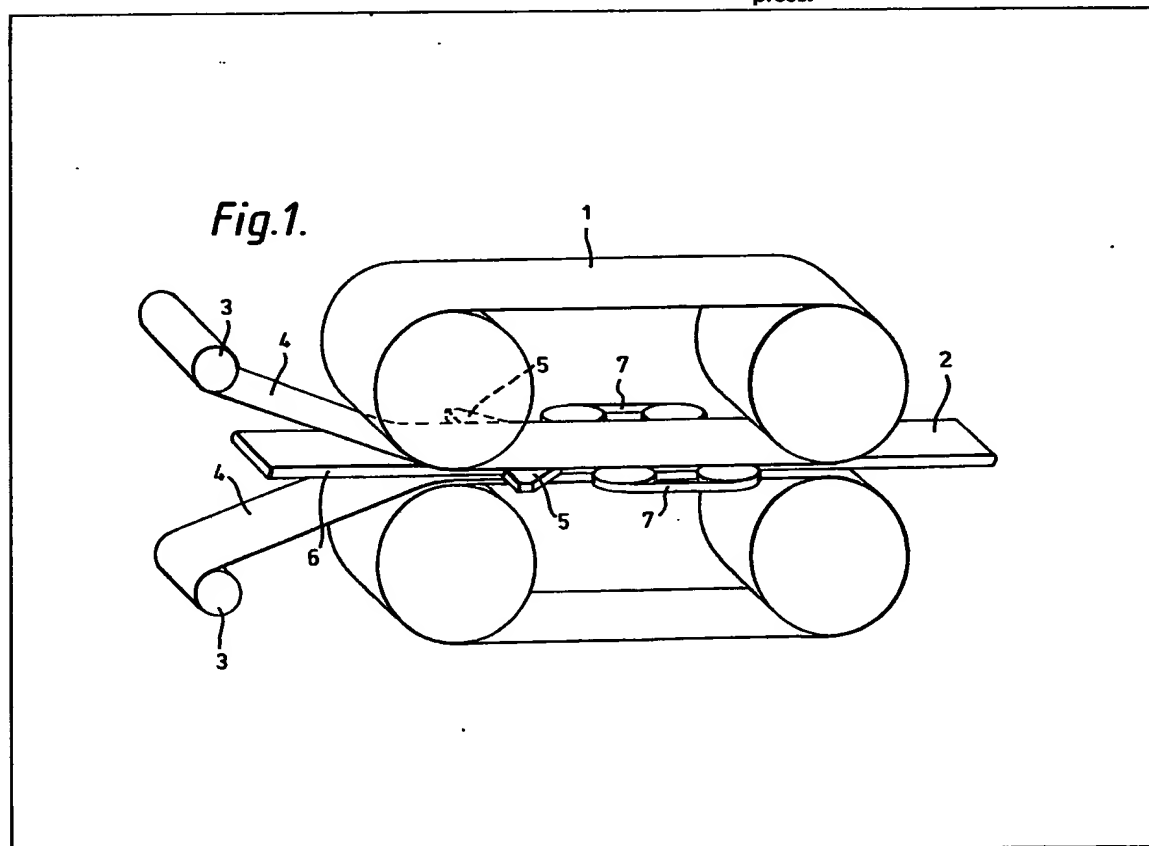
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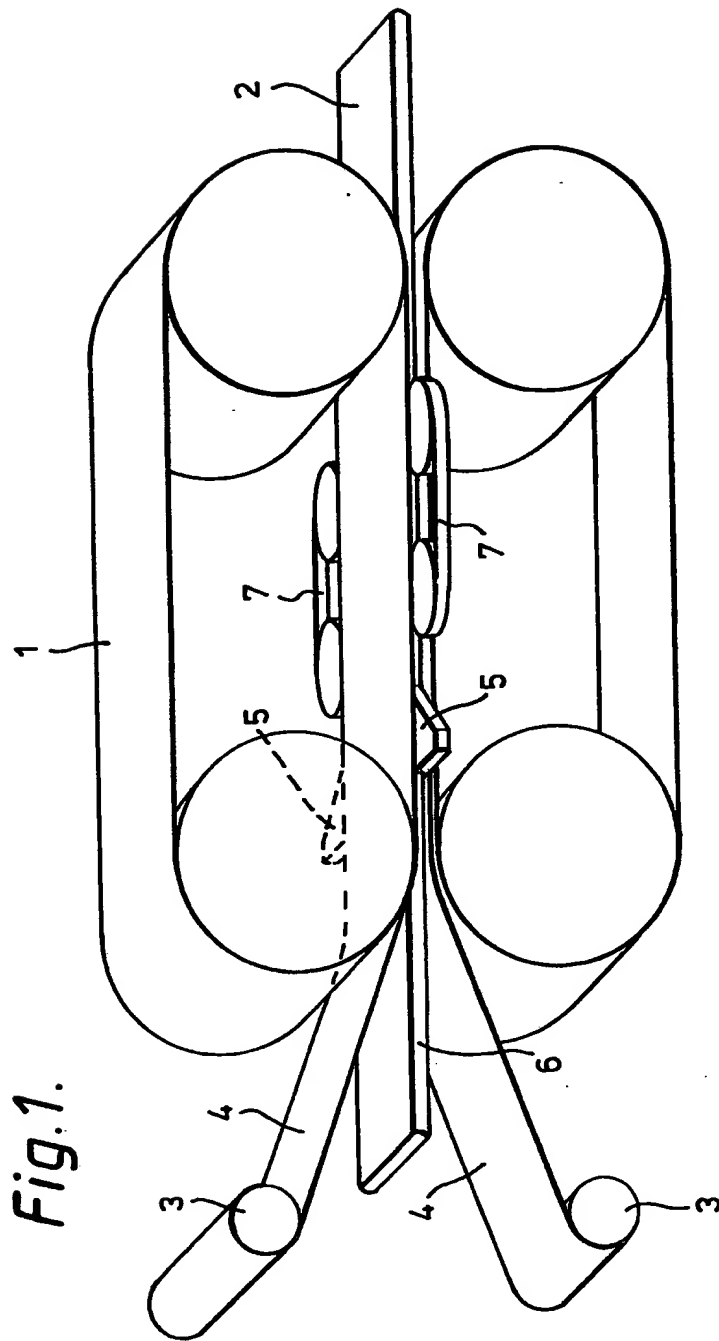
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(71) Applicants
Kurt Held,
Alte Strasse 1,
7218 Trossingen 2,
Federal Republic of
Germany.
(72) Inventors
Kurt Held

(74) Agents
Dr. Walther Wolff and Co.,
6 Buckingham Gate,
London,
SW1E 6JP.

(54) Method of and apparatus for covering chipboard planks

(57) A method of covering chipboard planks by laminating materials of thermosetting plastics, decorative papers impregnated with melamine resin or films of paper or of thermoplastic materials, comprises gluing and pressing the material onto the plank. The covering strip material (4) is brought, under a real pressure and optionally also with heating, onto the plank (2) continuously in a main double band press (1), wherein the upper and lower strips (4) are wider than the plank in correspondence with the plank thickness. The portions of the strips projecting at both sides are bent over against the plank edges or separately supplied edge strips are applied. The edge covering strips or strip portions are pressed against the plank edges by means of one or more smaller double band presses (7) arranged to both sides at right angles to the main press.





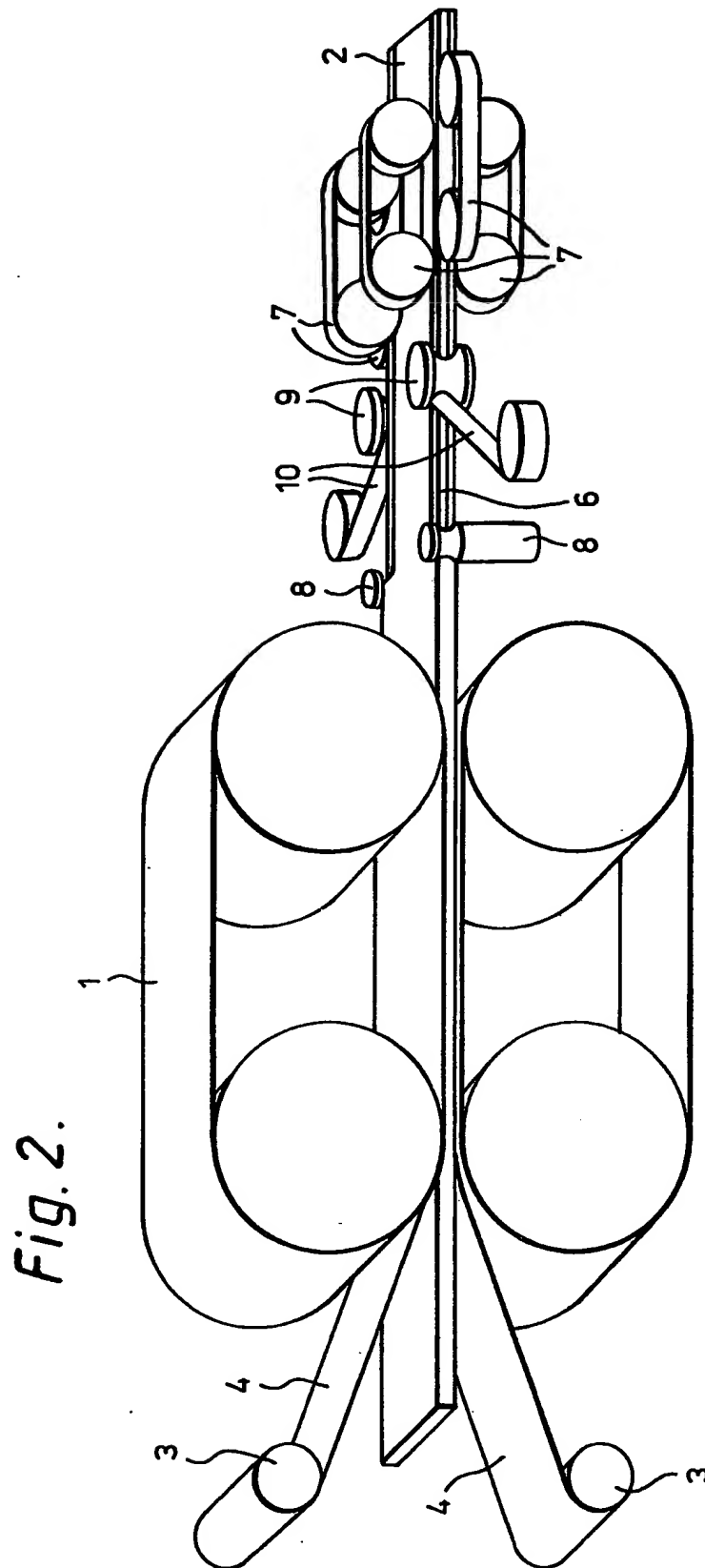
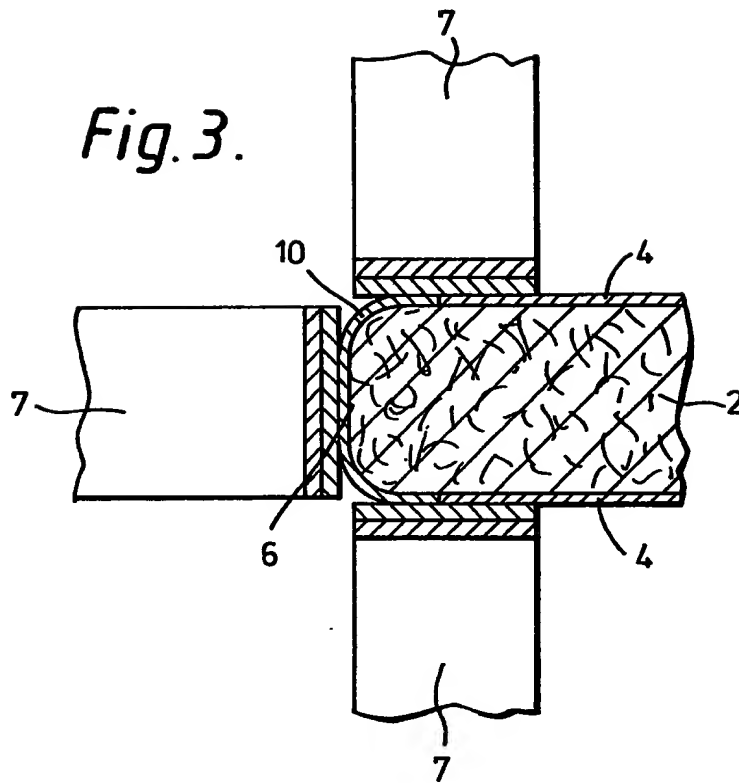
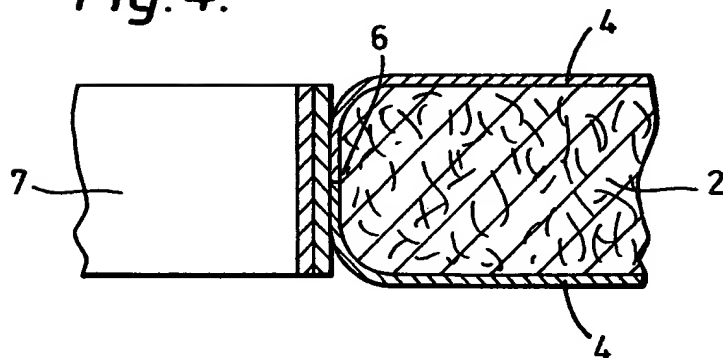


Fig. 3.*Fig. 4.*

SPECIFICATION

Method of and apparatus for covering chipboard planks

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The present invention concerns a method of and apparatus for covering chipboard planks with laminating materials of, for example, thermosetting plastics and decorative paper impregnated with melamine resin. The covering materials can be

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pressed onto strip-shaped, substantially flat chipboard lengths with the use of, for example, double band presses.

Furniture elements with covered surfaces are increasingly made from boards which, as chipboard strips of appropriate width entirely covered by sheet material, are stocked in a range of multiple lengths by the furniture manufacturer and are then divided up as required on a daily basis and processed to the

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finished state. Warm or cold hardening urea adhesives have proved suitable for gluing of covering materials onto the chipboard in those cases where decorative paper impregnated with melamine or urea-melamine are not pressed on directly and caused to harden.

When post-forming covering materials are, for example with the formation of round edges, applied to the surfaces and longitudinal cutting edges of a chipboard strip, then conventional practice is to

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press a sheet of covering material, which is dimensioned to be larger by the cut edge width, onto the preprofiled strip with the use of urea adhesive substance in a single-daylight press, thus hardening cold or warm discontinuously. The projecting part of the covering material sheet can thereafter be bent over with additional application of heat and adhesive substance and can be glued onto the profiled cut edge with the addition of adhesive substance to the cut edge in a continuously operating post-forming,

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edge-gluing machine. This process, apart from being in two stages, has many difficulties and disadvantages, which are well known to the expert and which need not be discussed in detail.

There is accordingly a need for a single-stage process, operating continuously, for the covering of such chipboard strips, with the use of continuously manufactured covering materials and with apparatus which avoids the problems of the two-stage mode of operation with discontinuous single-daylight press and continuously operating edge

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gluing machine.

According to a first aspect of the present invention there is provided a method of covering chipboard planks with sheet material, comprising the steps of

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continuously applying a respective covering strip of sheet material to each of the major surfaces of each plank, exerting pressure on the applied strips by means of a main press thereby to effect adhesive bonding of the strips to said major surfaces, and covering the longitudinal edge surfaces of the plank with strip material pressed against and adhesively bonded to said edge surfaces by means of a double press band arranged at the longitudinal edges of the plank to exert pressure in a direction perpendicular

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press.

In a preferred example of the method, the sheathing of areal chipboard profiles by laminating materials of thermosetting plastics, decorative papers impregnated with melamine resin or films of paper or of thermoplastic materials is carried out by gluing and pressing onto the cut edges or profile edges of the chipboard. The laminating materials or decorative papers are brought, under areal pressure and if so desired with heating, onto the chipboard strips continuously in a double band press, wherein the upper and the lower web of the laminating material or decorative paper are dimensioned to be wider in correspondence with the thickness of the chipboard and the part projecting at both sides is bent over and pressed against the profile edge or a specially supplied separate edge strip of laminating material is applied, the profile coatings being pressed on by means of one or more smaller double band presses arranged to both sides at right angles to the main press.

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According to a second aspect of the invention there is provided apparatus for carrying out the method of the first aspect of the invention, the apparatus comprising a first double band press defining a length portion of a path for passage through the apparatus of said chipboard plank with said respective covering strip of sheet material applied to each of the major surfaces thereof, the first press being operable to exert pressure on the applied strips thereby to effect adhesive bonding of the strips to said major surfaces, and at least one second double band press arranged laterally of the path at both sides thereof to exert pressure in a direction perpendicular to the direction of pressure exertion by the first press in order to press covering strip material against and adhesively bond the strip material to each of the longitudinal edge surfaces of the plank.

With the use of thermosetting adhesive substances, such as urea, resorcinol or polyurethane adhesive substances, the requiring areal pressing and, if so required, heating take place through a main double band press. Directly in the region of the main double band press or immediately adjoining the main press, the pressing of strip material onto the profiles or edges takes place in one or more suitable dimensioned and arranged double band presses, wherein the margins of the covering material strip, which is dimensioned to be wider in correspondence with the plank thickness to be covered is effected after the laying over or beading over of the strip margins onto the profile or by means of separately supplied covering material edge strips.

According to the demands made on the surface properties of the chipboard planks, it can be expedient to effect the pressure for the gluing of the lateral web projections onto the cut edge by a double band edge press arranged expediently in the zone of the main double band press or alternatively to arrange the edge press externally of the main press but immediately adjoining this press in the direction of advance.

Again in accordance with the required surface

properties, it can be advantageous to press a decorative paper, resinated for example with melamine or polyester and hardening directly or prehardened, onto the plank major surfaces with the aid of

5 the main press first in the direction of advance and thereafter to laterally profile the plank and the hardened decorative paper layer by trimming. Finally, by means of two or three, as a rule small, double band presses arranged in U-shape around and
10 directed towards the profiled edge, a suitably dimensioned strip of covering material is pressed onto each edge with the addition of adhesive substance.

Other, for example, liquid surface materials can be applied to strip-shaped, areal material and these be
15 pressed on, hardened, embossed, smoothed or in other manner brought closer to the final state by the arrangement of several double band presses acting in the same zone or one after the other.

A significant advantage of a method exemplifying
20 the present invention is that it enables single-stage processing of post-forming covering materials which, due to the strong heating required in the gluing process, harden further in undesired manner, whereas now for all gluing operations only a single
25 heating-up is necessary. A further heating, which may be desirable from the aspect of chemical resistance, can be carried out with impairing the final forming. Further advantages result for the processing operations downstream of the main press
30 insofar as the chipboard plank is firmly clamped in the press, so that finishing process forces are thus absorbed by the plank itself or by the main press and special precautions for the workpiece reception can be dispensed with.

35 Embodiments of the present invention will now be more particularly described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a schematic perspective view of apparatus according to a first embodiment of the
40 invention;

Figure 2 is a schematic perspective view of apparatus according to a second embodiment of the invention;

Figure 3 is a sectional view of a longitudinal edge region of a chipboard plank end of press elements of the apparatus of *Figure 2* applying a strip covering to said edge region; and

Figure 4 is a sectional view of a longitudinal edge region of a chipboard plank and of press elements of the apparatus of *Figure 1* applying a strip covering to said edge region.

Referring now to the drawings, there is shown in *Figure 1* a main double band press 1 with a continuously fed chipboard plank 2, and supply rolls
55 3 supplying covering strips 4 which are applied to the plank 2. The strips 4 on the plank 2 project at their outer edges by such an appropriate amount that on laying over or beading over by pressing equipment 5, a smooth covering of the longitudinal plank edges
60 6 by the strips 4 is achieved. Further double band edge presses 7 arranged laterally of the main press 1 serve to press the excess edge portions of the strips 4 against the plank edges 6.

Figure 2 shows an embodiment in which three
65 double band edge presses 7 are arranged in U-shape

around the edge 6 of the covered plank 2 and serve to equip the edge 6 with a separate edge strip 9 after milling of the plank edge region by a miller 8.

The *Figures 3* and *4* each show a cross-section of
70 part of a plank 2 with edge covering. The product according to *Figure 4* is made by the apparatus of *Figure 1* and that in *Figure 3* by the apparatus of *Figure 2*.

According to *Figure 3*, the chipboard plank 2 has
75 been covered at both major sides by covering strips 4 in the main press 1. The edge 6 is milled by the miller 8 and, with the aid of strip supply and application equipment 9, an edge strip 10 is pressed into place by means of the three double band edge
80 presses 7 arranged in U-shape around the edge 6.

According to *Figure 4*, the projecting margins of the covering strips 4 are bent over by means of the pressing equipment 5 and are pressed on by means of the double band edge press 7.

85 CLAIMS

1. A method of covering chipboard planks with sheet material, comprising the steps of continuously
90 applying a respective covering strip of sheet material to each of the major surfaces of each plank, exerting pressure on the applied strips by means of a main press thereby to effect adhesive bonding of the strips to said major surfaces, and covering the
95 longitudinal edge surfaces of the plank with strip material pressed against and adhesively bonded to said edge surfaces by means of a double press band arranged at the longitudinal edges of the plank to exert pressure in a direction perpendicular to the
100 direction of pressure exertion by the main press.

2. A method as claimed in claim 1, wherein each of the applied strips is wider than the plank so as to project beyond each longitudinal edge thereof by an amount determined with reference to the thickness
105 of the plank, and the step of covering said edge surfaces comprises bending over the projecting portions of the applied strips.

3. A method as claimed in claim 1, wherein the step of covering said edge surfaces comprises
110 applying a respective separate strip of material to each of said edge surfaces.

4. A method as claimed in claim 1, wherein the sheet material is one of thermoplastic plastics material, thermosetting film and resin-impregnated
115 decorative paper.

5. A method substantially as hereinbefore described with reference to *Figures 1* and *4* of the accompanying drawings.

6. A method substantially as hereinbefore described with reference to *Figures 2* and *3* of the accompanying drawings.

7. Apparatus for carrying out the method as claimed in claim 1, comprising a first double band press defining a length portion of a path for passage
125 through the apparatus of said chipboard plank with respective covering strip of sheet material applied to each of the major surfaces thereof, the first press being operable to exert pressure on the applied strips thereby to effect adhesive bonding of the
130 strips to said major surfaces, and at least one second

double band press arranged laterally of the path at both sides thereof to exert pressure in a direction perpendicular to the direction of pressure exertion by the first press in order to press covering strip material against and adhesively bond the strip material to each of the longitudinal edge surfaces of the plank.

8. Apparatus as claimed in claim 7, wherein the or each second double band press is disposed laterally of said length portion of the path.

9. Apparatus as claimed in claim 7, wherein the or each second press is disposed downstream of said length portion of the path.

10. Apparatus as claimed in any one of claims 7 to 9, further comprising third double band presses arranged adjacent the second press or presses to exert pressure, parallel to the direction of pressure exertion by the first press, on strip material at the longitudinal edge regions of the plank.

11. Apparatus as claimed in any one of claims 7 to 10, comprising means for bending over any projecting portions of said applied strips to lie against said edge surfaces.

12. Apparatus as claimed in any one of claims 7 to 10, comprising milling means for removing longitudinal edge portion of said applied strips and applying means for applying a respective separate strip of material to each of said edge surfaces.

13. Apparatus as claimed in any one of claims 7 to 12, wherein the or each second press is adjustable.

14. Apparatus as claimed in any one of claims 7 to 12, wherein the or each second press is rotatable.

15. Apparatus substantially as hereinbefore described with reference to Figures 1 and 4 of the accompanying drawings.

16. Apparatus substantially as hereinbefore described with reference to Figures 2 and 3 of the accompanying drawings.